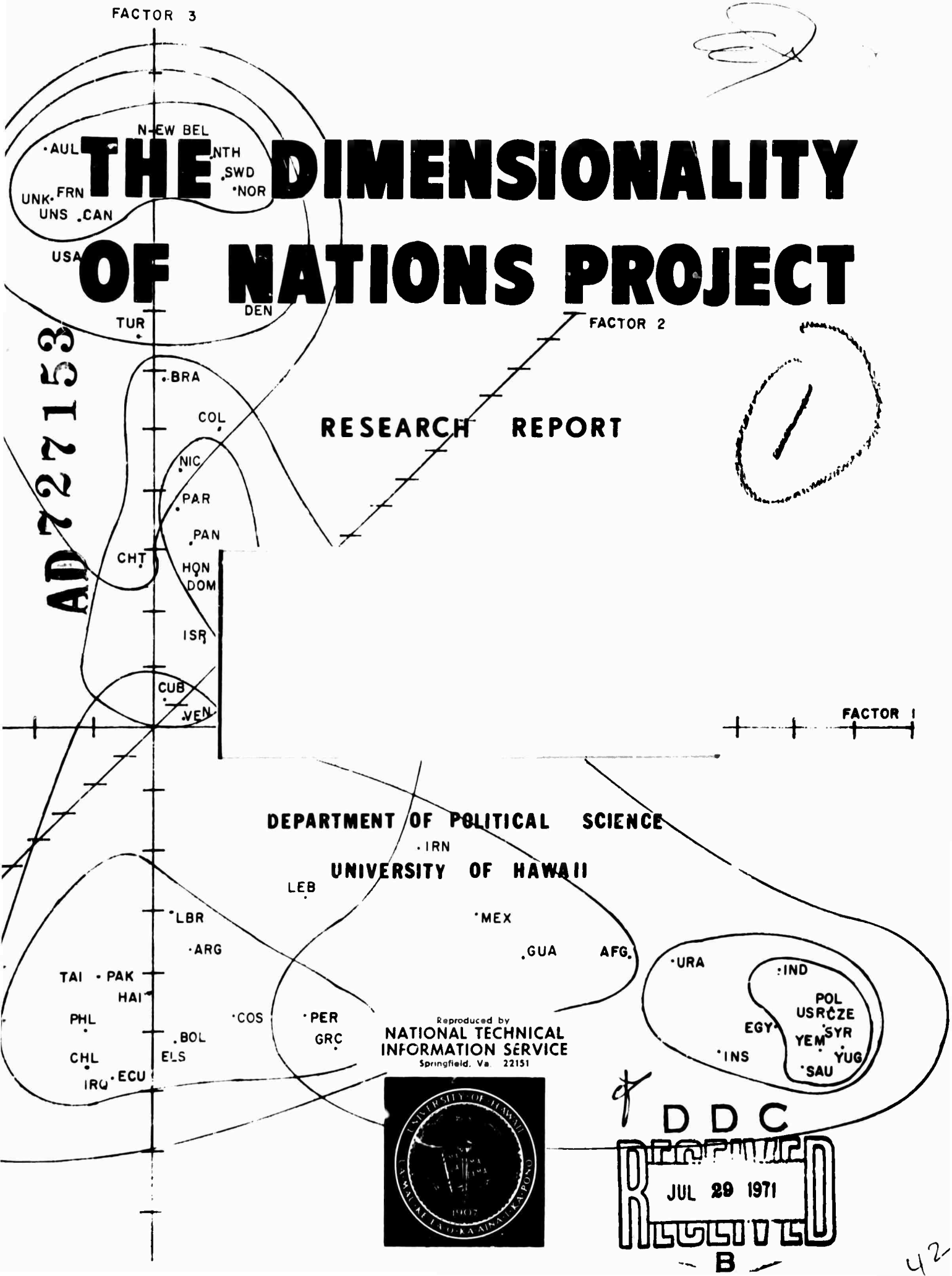


THE DIMENSIONALITY OF NATIONS PROJECT

RESEARCH REPORT

DEPARTMENT OF POLITICAL SCIENCE
UNIVERSITY OF HAWAII

Dimensionality of Nations Project

Department of Political Science

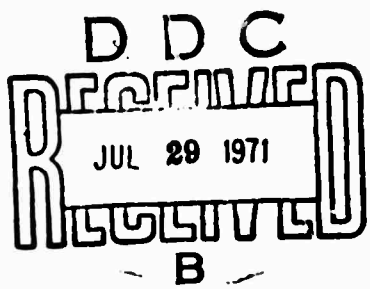
University of Hawaii

RESEARCH REPORT NO. 12

The Patterns of Dyadic Foreign Conflict Behavior for 1963

Dennis R. Hall
and
R. J. Pummel

June, 1968



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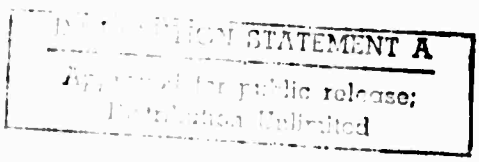

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13 ABSTRACT

Five patterns of dyadic foreign conflict behavior were delineated for 1963. The strongest of these patterns was negative communications, which was even stronger as a pattern than it had been for a 1955 dyadic foreign conflict study. The third pattern, violence intensity, and the fourth pattern, warning and defensive acts, marked the general decrease in military activity from 1955 to 1963. The most militant conflict behavior in 1963 was that of China to Taiwan and Taiwan to China. There were a number of warning and defensive acts, most noteworthy being those of Indonesia to Malaysia and Malaysia to Indonesia. Negative sanctions and unofficial incidence of violence were the most stable patterns of foreign conflict behavior. The United States was involved in a number of sanctions directed against Cuba, the Dominican Republic, Russia, and South Vietnam. The unofficial incidents of violence occurred most frequently in the less developed, smaller nations, and were frequently directed against major world powers. The negative communication pattern characterized the primary behavior of the major world powers.

Data collection from The New York Times for the 1963 study assumed a typology of foreign conflict behavior subsuming the diverse reported events. The patterns of the 1963 study provided good evidence for the soundness of this typology - the five major categories of the typology emerged as the five basic, uncorrelated behavior patterns of dyadic foreign conflict behavior.

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Foreign Conflict						
Factor Analysis						
Conflict Groups						

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1. ABSTRACT

Five patterns of dyadic foreign conflict behavior were delineated for 1963. The strongest of these patterns was negative communications, which was even stronger as a pattern than it had been for a 1955 dyadic foreign conflict study. The third pattern, violence intensity, and the fourth pattern, warning and defensive acts, marked the general decrease in military activity from 1955 to 1963. The most militant conflict behavior in 1963 was that of China to Taiwan and Taiwan to China. There were a number of warning and defensive acts, most noteworthy being those of Indonesia to Malaysia and Malaysia to Indonesia. Negative sanctions and unofficial incidence of violence were the most stable patterns of foreign conflict behavior between 1955 and 1963, each accounting for about ten percent of foreign conflict behavior. The United States was involved in a number of sanctions directed against Cuba, the Dominican Republic, Russia, and South Vietnam. The unofficial incidents of violence occurred most frequently in the less developed, smaller nations, and were frequently directed against major world powers. The negative communication pattern characterized the primary behavior of the major world powers.

Data collection from The New York Times for the 1963 study assumed a typology of foreign conflict behavior subsuming the diverse reported events. The patterns of the 1963 study provided good evidence for the soundness of this typology - the five major categories of the typology emerged as the five basic, uncorrelated behavior patterns of dyadic foreign conflict behavior.

2. CONFLICT PATTERNS FOR DYADIC BEHAVIOR

Systematic research may ultimately allow us to predict to behavior in the international system. Long before this becomes possible, however, it will be necessary to derive and test an empirical typology of international behavior and to reduce behavior to its primary patterns. One unit of behavioral analysis in this task is the dyad, a pair of nations coupled by the behavior of one towards the other. One type of such behavior is hostile, reflecting the existence of a conflict situation between nations. Behavior of a hostile sort, or conflict behavior, has been our concern in the research reported here. This is not to ignore cooperative behavior, but rather to focus on conflict behavior sufficiently to enable, in a larger study, the correlation of those patterns with those involving cooperation.

Hostile acts between nations occurring in 1963 and reported in daily issues of The New York Times were collected for analysis using a foreign conflict code sheet (Rummel, 1966). Each hostile act was recorded as to actor, object, date, type of action involved, and descriptive information of the act. The code sheet employs an empirically derived typology differentiating six primary categories of foreign conflict behavior: warning and defensive acts, violent acts, negative behavior acts, negative communications, unofficial violence, and nonviolent demonstrations. These primary categories are further divided into approximately one hundred sub-categories.

All hostile acts for 1963 were recorded on code sheets, one sheet to an act. The code sheets for a specific dyad were then aggregated for 1963 and frequencies were calculated for each type of conflict act,

such as threat, mobilization, diplomatic snubs, accusations, anti-foreign demonstrations, and clashes. Those acts that occurred with sufficient frequency for analysis were selected as variables for this study. Figure 2.1 lists the conflict variables for 1963 formed from the codings of The New York Times.

Almost three-thousand conflict acts involving 275 dyads were recorded for 1963. A listing of the raw data and descriptive statistics on the variables are given in Appendix I.

The product-moment correlation matrix between the raw data on the 24 conflict variables for 275 dyads is shown in Table 2.1. These correlations were factor analyzed (component analysis) to delineate the patterns of dyadic foreign conflict behavior. Since the component factor model was used, the patterns delineated describe the total (common and unique) variation among the conflict acts.

The question of when to stop factoring - how many patterns to delineate - has been of central concern in applying factor analysis. There is no pat answer; a decision has to be based on the aims of the analysis. Component analysis of total variance typically delineates as many dimensions as variables and this study is no exception.

The eigenvalues indicate the amount of variance accounted for by the dimensions. The squares of the eigenvalues divided by the number of variables indicates the proportion of variance accounted for by the dimensions. To rotate factors beyond the sixth dimension would involve such a small proportion of variance in the data that inclusion can be justified only when theoretic interest in the total pattern of a dimension outweighs the demand for parsimony.

Figure 2.1

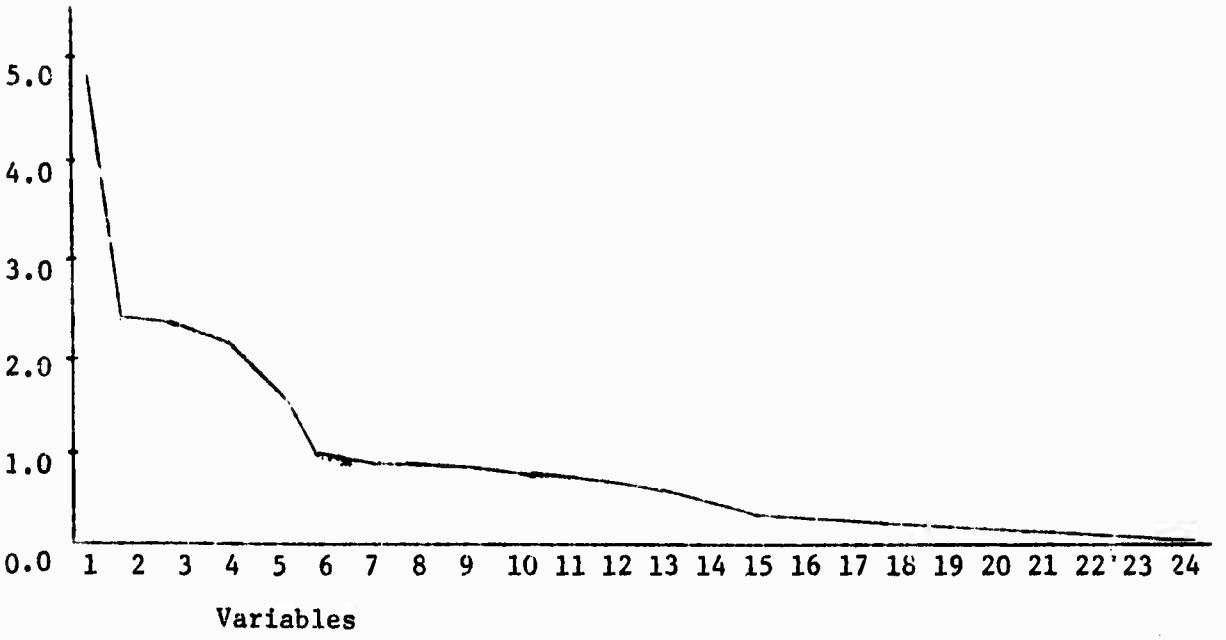
DYADIC FOREIGN CONFLICT 1963 VARIABLE LIST WITH CODES*

Primary Category	Variable No.	Code		Variable
warning and defensive acts	1	WARNDF	-	Warning and Defensive Acts
	2	ALRTMB	-	Alerts and Mobility
violent acts	3	PLNVIL	-	Planned Violent Acts
	4	WARACT	-	Overt Violence
	5	DISCMA	-	Discrete Military Actions
	6	DAYVIL	-	Days of Violence
negative behavior acts	7	NEGACT	-	Negative Behavior Acts
	8	UNCNEG	-	Unclassified Negative Acts
	9	SEVDPR	-	Severence of Diplomatic Relations
	10	EXPREC	-	Expulsion or Recall
	11	BCOTEM	-	Boycott or Embargo
	12	AIDREB	-	Aid to Rebels
negative communication	13	NEGCOM	-	Negative Communication
	14	WRTCOM	-	Written Negative Communication
	15	ORLCOM	-	Oral Negative Communication
	16	WRTORL	-	Written or Oral Negative Communication
	17	ACCUSN	-	Accusations
	18	PROTST	-	Protests
	19	MINTHM	-	Minor Themes
unofficial violence	20	UNOFVL	-	Unofficial Violence
	21	ATKEMB	-	Attacks on Embassy
	22	ATKPER	-	Attacks on Persons
	23	ATKFLG	-	Attacks on Flag
non-violent demonstrations	24	NVIOLB	-	Non-Violent Behavior

*Primary code sheet categories will be separated by solid lines throughout the rest of this report. Variables 1-19 are Official Acts; Variables 20-24 are Unofficial Acts.

Figure 2.2

EIGENVALUES*



*24 unrotated component factors (principle axes)

Table 2.1

Correlation Matrix

Table Name																								
WARNDF	1.00																							
ALRTMB	.98	1.00																						
PLNVIL	.14	.06	1.00																					
VARACT	.21	.16	.65	1.00																				
DISCMA	-.00	-.01	.21	.41	1.00																			
DAYVIL	-.02	-.02	.16	.36	1.00	1.00																		
NEGACT	.12	.11	-.03	-.04	-.04	-.03	1.00																	
UNCNEG	.10	.10	-.00	-.02	-.04	-.04	.64	1.00																
SEVDPR	.15	.14	-.01	.02	-.04	-.04	.41	-.00	1.00															
EXPREC	-.06	-.06	-.07	-.11	-.04	-.04	.44	.01	-.06	1.00														
ECOTEM	-.04	-.04	-.05	-.07	-.03	-.03	.37	.04	-.00	.12	1.00													
AIDREB	.02	.02	-.00	.14	.19	.19	.18	-.02	-.01	-.00	-.04	1.00												
NEGCOM	.17	.18	.05	.06	-.03	-.04	.09	.11	-.11	-.00	.00	.01	1.00											
WPTCOM	.01	.01	-.02	-.01	-.03	-.03	.10	.05	-.10	.03	-.00	.09	.86	1.00										
ORLCOM	.16	.15	.05	.05	-.00	-.00	-.01	.06	-.08	-.10	-.06	-.05	.68	.45	1.00									
WRTORL	.31	.32	.13	.13	-.03	-.05	.13	.16	-.08	.04	.04	-.05	.79	.50	.42	1.00								
ACCUSN	.14	.14	.10	.11	-.03	-.04	.03	.00	-.08	-.02	-.04	.03	.90	.80	.66	.71	1.00							
PROTST	-.00	.01	-.06	-.08	-.04	-.04	.20	.21	-.10	.08	.12	-.02	.59	.62	.26	.46	.29	1.00						
MIITHM	.26	.25	.16	.19	-.01	-.03	.07	.06	-.07	.03	.05	.03	.78	.59	.64	.70	.78	.34	1.00					
CNOFVL	.03	.02	.00	-.01	-.03	-.03	-.09	-.03	-.06	-.04	-.05	-.04	-.06	-.05	-.05	-.06	-.05	-.05	-.05	1.00				
ATKEMB	.18	.15	.08	.07	-.02	-.03	-.05	.01	-.04	-.03	-.05	-.04	-.03	-.04	-.03	-.00	-.03	-.06	-.03	.25	1.00			
ATKPER	.02	-.00	.06	.05	-.02	-.02	-.03	.02	-.04	-.06	-.04	-.04	-.07	-.05	-.04	-.07	-.05	-.04	-.04	.78	.28	1.00		
ATKFLG	-.05	-.04	-.01	.04	-.03	-.03	-.07	.01	-.09	-.01	-.05	-.04	-.08	-.05	-.05	-.08	-.06	-.05	-.07	.75	.18	.62	1.00	
INVIOLR	.23	.22	-.00	.09	-.02	-.02	-.05	-.05	.06	-.07	.00	-.04	-.04	-.04	-.05	-.02	-.03	-.05	.05	.02	.06	.07	-.01	1.00
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

= 275 Dyads. Correlations are Product-moment.

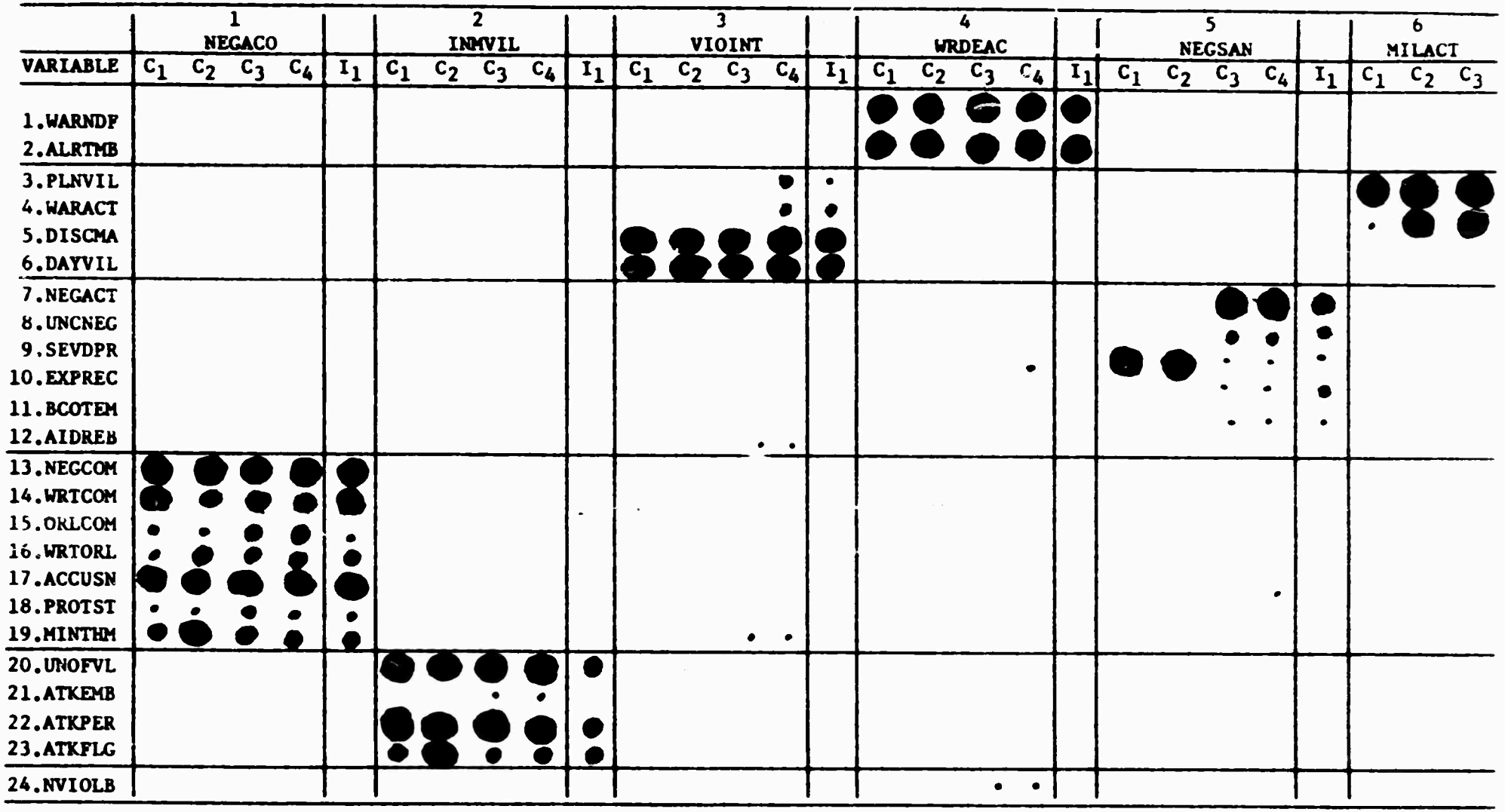
To determine whether rotating only six factors would affect the factor structure, we carried out additional rotations for different numbers of factors. Figure 2.3 displays the different orthogonally rotated component matrices. The best matching component patterns from each of four rotations are shown together. Each of these groups of factors are named, as indicated across the top of the display. The groups of patterns named negative communications (NEGACO), unofficial violence (INCVIO), violence intensity (VIOINT), and warning and defensive acts (WRDEAC) are remarkably stable on high loadings through the four rotations. The fifth group of dimensions, negative sanctions (NEGSAN), indicate that some differences do show up when rotations are based on different numbers of factors. The negative sanctions pattern accounts for about nine percent of total variance in the data and is retained for its theoretic interest.

The third (VIOINT) and sixth (MILACT) groups of dimensions have variables loading on them that measure behavior in the violent acts code sheet category. Since variables number 3 (PLNVIL) and 4 (WARACT) load moderately on the third dimension (VIOINT), the six group of dimensions (MILACT) can be dropped from the analysis in the interests of parsimony.

The fifth column in each group of dimensions in Figure 2.3 shows the result of orthogonally rotating five image factors (Harman, 1967, Chapter 8 - Rummel, 1968, Chapter 5). Image analysis is a type of common factor analysis in which the unique variance for each variable is removed from the analysis. Image analysis delineates factor patterns from that portion of variance in any one variable which can be predicted from the remaining variables in a least squares sense. Appendix II gives the covariance matrix which was image factor analyzed along with the image

Figure 2.3

COMPARISON OF ROTATED FACTOR LOADINGS



KEY

		eigenvalue of last factor
C_1	= Component Factor Analysis (20 factors)	.03
C_2	= Component Factor Analysis (14 factors)	.48
C_3	= Component Factor Analysis (6 factors)	1.21
C_4	= Component Factor Analysis (5 factors)	1.92
I	= Image Factor Analysis (5 factors)	1.72

absolute loadings

_ .86 ● _ .50 •

_ .71 ● _ .30 •

orthogonally rotated five factor matrix. It should be clear from Figure 2.3 that image analysis does not affect the pattern delineation significantly. In other words, our results are invariant of choice of common or component models.

The orthogonally rotated five component matrix for 24 dyadic conflict variables is shown in Table 2.2. This table corresponds to the five factor results (C_4) shown in Figure 2.3. The five rotated dimensions account for 59.8 percent of total variance in our foreign conflict data. Dimension one - negative communication (NECACO) - alone accounts for 20.2 percent of the variance. The last column of figures in Table 2.2 are the communalities (h^2) of the variables, that is, the proportion of variance in each of the variables accounted for by the five dimensions.

The five dimensions of Table 2.2 are mutually uncorrelated. Accordingly, an oblique rotation (biquartimin technique) of the components was computed and compared with the orthogonal rotation. Table 2.3 shows the correlations between the five primary factors defining the oblique patterns. The off-diagonal correlations are low, indicating that the dimensions are indeed orthogonal for all practical purposes. Therefore, the obliquely rotated results will be omitted from further consideration.

3. STABILITY OF CONFLICT PATTERNS FROM 1955 TO 1963

The delineation of five dyadic conflict patterns for 1963 gives information only for one cross-section of time. Many other cross-sections must be added to the analysis before conflict dynamics can be isolated. A study of dyadic foreign conflict behavior in 1955 has been published (Rummel, 1967) and will at least give a second cross-section to contrast with the patterns delineation for 1963.

Table 2.2

Orthogonally Rotated Matrix*

Variable No.	Name	Dimensions 1	2	3	4	5	h^2
1	WARNDF	.17	.04	+.07	(.92)	.05	.88
2	ALRTMB	.17	.02	+.04	(.90)	.05	.84
3	PLNVIL	.08	.06	(+.51)	.22	-.14	.34
4	WARACT	.08	.06	(+.70)	.28	-.14	.59
5	DISCMA	-.05	-.03	(+.91)	-.13	-.03	.86
6	DAYVIL	-.06	-.03	(+.89)	-.15	-.02	.82
7	NEGACT	.06	-.04	+.04	.12	(.96)	.94
8	UNCNEG	.10	.06	+.01	.10	(.65)	.45
9	SEVDPR	-.17	-.12	-.02	.31	.31	.24
10	EXPREC	-.00	-.03	-.05	-.14	.49	.26
11	BCOTEM	.00	-.05	-.03	-.08	.45	.21
12	AIDREB	.00	-.06	+.33	-.05	.16	.14
13	NEGCOM	(.98)	-.04	+.00	.01	.04	.97
14	WETCOM	(.85)	-.02	-.02	-.18	.07	.76
15	ORLCOM	(.72)	-.03	+.01	.06	-.13	.54
16	WRTORL	(.80)	-.03	+.03	.22	.10	.69
17	ACCUSN	(.92)	-.03	+.03	.02	-.08	.85
18	PROTST	(.59)	-.02	-.06	-.18	.30	.48
19	MINTHM	(.84)	-.03	+.08	.18	-.01	.75
20	UNOFVL	-.03	(.92)	-.03	-.02	-.04	.86
21	ATKEMB	-.04	.40	-.00	.25	-.07	.23
22	ATKPER	-.04	(.88)	+.01	.00	-.00	.78
23	ATKFLG	-.04	(.85)	-.02	-.09	-.02	.74
24	NVIOLB	-.06	.03	-.03	.39	-.11	.17
Percent of total Variance		20.21	10.69	10.41	9.75	8.73	59.79
Percent of Common Variance		33.80	17.88	17.41	14.61	14.61	

*Component analysis(employing ones in principal diagonal of product-moment correlation matrix) and principle axes technique. Cutoff eigenvalue is 1.92. Rotation is Varimax. From factor analysis of Table 2.1.
Loadings greater or equal to an absolute value of .50 are shown in parentheses.

Table 2.3

CORRELATIONS BETWEEN PRIMARY FACTORS*

	NEGACO	INCVIO	VIOINT	WRDEAC	NEGSAN
NEGACO	1.00				
INCVIO	0.00	1.00			
VIOINT	0.02	-0.03	1.00		
WRDEAC	0.01	-0.07	0.04	1.00	
NEGSAN	0.01	-0.09	0.00	0.03	1.00

*Biquartimin rotation technique: 30 major cycles, 6938 iterations.

For a number of reasons a direct visual comparison of the factor loadings for the two periods cannot precisely define any shift in patterns. First, the 1963 study employed 24 variables and the 1955 study employed 16. Second, the 1963 study delineated five primary patterns of behavior, while the 1955 study delineated only four. Third, independent rotation of the two studies may have delineated different appearing patterns, although still linear transformations of each other. Fourth, the factor matrices are simply too large to compare visually.

We have employed another approach requiring some modifications in the original analysis. The technique, called transformation analysis, rotates the patterns of one study to a best (least squares) fit with those of the second study, removing the influences of the separate rotations specific to each study (Ahmavaara, 1957; the technique is discussed in Rummel, 1968, chapter 20). The technique requires that both factor matrices involved in the transformation analysis have the same variables.

Although factor matrices for 1955 and 1963 with common variables can be formed by omitting variables from each matrix uncommon to both, we approached the problem differently. We refactor analyzed the 1955 and 1963 data matrices after removing variables uncommon to both. By analyzing the same variables we were able to generate factor scores for a research design to be reported in Hall and Rummel (1968).

Comparison of the same variables led to considerable complication of the research design. The code sheet categories and subcategories which had occurred with enough frequency to be analyzed for the 1963 study (see Figure 2.1) were substantially different from the categories and subcategories occurring with sufficient frequency in 1955 (Rummel, 1967). Consequently, only sixteen of these categories and subcategories are common to the dyadic conflict variable lists for both years. Since the sixteen conflict variables were fewer than those employed in the 1955 study, both the 1955 and 1963 studies had to be reanalyzed for these alone.

Figure 3.1

VARIABLE LIST WITH CODES FOR BEHAVIOR PATTERN COMPARISON*

warning and defensive acts	1	WARNDF - Warning and Defensive Acts
	2	ALRTMB - Alerts and Mobility
violent acts	3	PLNVIL - Planned Violent Acts
	4	WARACT - Overt Violence
	5	DISCMA - Discrete Military Actions
	6	DAYVIL - Days of Violence
negative behavior acts	7	NEGACT - Negative Behavior Acts
	8	BCOTEM - Boycott or Embargo
negative communication	9	NEGCOM - Negative Communication
	10	WRTCOM - Written Negative Communication
	11	ORLCOM - Oral Negative Communication
	12	WRTORL - Written or Oral Negative Communication
	13	ACCUSA - Accusations
	14	PROTST - Protests
unofficial violence	15	ATKEMB - Attacks on Embassy
non-violent demonstrations	16	NVIOLB - non-violent Behavior

*These variables are common to both the 1955 and the 1963 studies. Variables 1-14 are official acts; variables 15-16 are Unofficial acts.

The factor structure for the 1963 study remained largely unchanged with the reduction in the number of variables and again we rotated five component factors. These five patterns, accounting for 72 percent of total variance in the sixteen variables, are named to correspond to the patterns of the twenty-four variable analysis. To avoid any differences between studies due to different numbers of factors, five patterns were also delineated for the 1955 study. The 1955 patterns account for 78 percent of variation in the sixteen variables.

Transformation analysis follows the basic form of regression analysis and, in matrix terms, is,

$$\text{Lambda} = (F_1'F_1)^{-1}F_1F_2,$$

where Lambda is the matrix of transformation (regression coefficients) of F_1 matrix of factors to matrix F_2, F_1 is the 1955 sixteen variable factor matrix, and F_2 is the 1963 sixteen variable factor matrix.

Taking the 1955 factor matrix as the <u>independent</u> study and the 1963 factor matrix as the <u>dependent</u> study (as in regression analysis) we calculate Lambda. The Lambda transformation matrix is then used to pre-multiply the 1955 study, F_1, to get a <u>least squares estimate</u>, $\hat{F}_2$, of the 1963 patterns,

$$\hat{F}_2 = F_1 \text{ Lambda}$$

The overall correspondence of F_2 to $\hat{F}_2$, the 1963 patterns estimated from the 1955 factor matrix, can be given by an intraclass correlation coefficient between all the loadings of $\hat{F}_2$ and F_2, that is, between the transformed 1955 patterns and those for 1963. For our 1955 and 1963 patterns the intraclass correlation coefficient is .71, meaning that there is a fifty percent congruence between the patterns of the two studies.

The finding that the correlation is .71 between 1963 factors and the best fit to these from 1955 suggests that the patterns of conflict behavior for nation dyads are fairly stable from 1955 to 1963. By knowing the 1955 conflict patterns alone, we can predict the conflict patterns for 1963 with about fifty percent reliability. The implication of this is that conflict behavior not only has regularity across nations, a finding of importance by itself, but also across time.

The regularity that we have discussed so far refers to the structure of conflict behavior defined by the five dimensions. How do these dimensions stand up individually when 1955 factors are transformed to a best fit with those of 1963? The Lambda transformation matrix when normalized by rows gives the cosines (correlations) between the factors of F_1 (1955 factor matrix) and F_2 (1963 factor matrix. F_1 are the rows in Table 3.1 and F_2 are the columns.

Table 3.1

LAMBDA TRANSFORMATION MATRIX NORMALIZED*

		NEGACO	VIOINT	WRDEAC	NEGSAN	NVIOLB
1955 dimensions of foreign conflict	NEGACO	(.96)	-.14	-.12	-.16	-.14
	VIOINT	-.04	(.73)	.38	.08	(.56)
	WRDEAC	.08	-.32	(.89)	-.07	-.31
	NEGSAN	.19	.03	.21	(.95)	-.13
	NVIOLB	-.45	.10	(.63)	.16	(.61)

*The sum of squares for the rows will equal 1.00. Cosines greater or equal to an absolute value of .50 are shown in parantheses.

The correlations of Lambda normalized are similar to the coefficient of congruence (Rummel, 1968, Chapter 20) and measure the similarity between factors that are not independently rotated. The highest conflict pattern congruence is between Negative Communication in 1955 and 1963 (.96).

A difference matrix,

$$D = F_2 - \hat{F}_2,$$

is calculated to determine the difference between the actual 1963 patterns and those that are the least squares estimates of 1963. The elements in the body of the difference matrix (Table 3.2) can be interpreted as the loading shifts from the 1955 patterns to those for 1963. Thus, variable 1, warning and defensive acts, loads .57 higher onto the 1963 pattern Warning and Defensive Acts (WRDEAC), then it does on the corresponding 1955 pattern.

Table 3.2
DIFFERENCE MATRIX, 1955 to 1963*

							Sum Sq.
1	WARNDF	.08	(-.38)	(.57)	.16	-.18	.53
2	ALRTMB	.03	-.03	(.44)	-.03	.06	.20
3	PLNVIL	-.10	(-.45)	-.22	-.04	(.53)	.55
4	WARACT	.04	.03	.14	-.09	(.44)	.23
5	DISCMA	-.18	(.50)	-.25	-.07	-.20	.39
6	DAYVIL	-.13	(.49)	-.27	.00	-.27	.40
7	NEGACT	(-.52)	.02	.07	(.60)	-.04	.64
8	BCOTEM	.05	-.01	-.02	.00	-.12	.02
9	NEGCOM	.17	-.03	.05	-.10	-.00	.04
10	WRTCOM	.02	.11	-.01	-.06	.04	.02
11	ORLCOM	-.01	-.04	.05	(-.30)	-.06	.10
12	WRTORL	(.48)	(-.30)	.00	.05	-.10	.34
13	ACCUSA	.10	-.03	.09	-.24	.10	.09
14	PROTST	-.02	.05	(-.31)	(.30)	-.10	.19
15	ATKEMB	-.04	.12	(-.32)	-.20	(.31)	.26
16	NVIOLB	-.01	.05	-.03	.04	-.27	.08
	Sum Sq	0.61	0.97	0.93	0.70	0.85	

*Ahmavaara's transformation technique where the difference matrix, $D = F_2 - \hat{F}_2$. F_2 is the matrix of 1963 factor loadings (component, varimax rotation), $\hat{F}_2$ is the linear transformation of F_1 factor loading matrix (component, varimax rotation) to a least squares fit with F_2. Differences greater or equal to an absolute value of .30 are shown in paranthesis.

The sum of squared loadings in the rows of Table 3.1 (SUMSQ) indicate the magnitude of shift over all patterns for the individual variables from 1955 to 1963. The sum square of rows is thus an index of variable stability for the patterns between the two years. The sum square of columns in Table 3.1 indicate the magnitude of shift over all variables for individual patterns from 1955 to 1963, and is thus an index of pattern stability for the variables between the two years.

4. TYPES OF DYADIC CONFLICT IN 1963

With the five dimensions of 1963 conflict behavior delineated on 24 conflict variables (section 1 of this report), we can locate in this conflict space each of the 275 dyads that had some conflict in 1963 in terms of their factor scores. The factor scores for dyads on these five dimensions give us a profile of the conflict behavior of each dyad. With these profiles we can then determine what dyads have similar profiles - similar conflict behavior - and then group dyads in terms of this similarity. These groups will define taxonomy of dyadic conflict behavior for 1963 (see discussion in Rummel, et al 1969, Chapter 11).

A problem in developing such a taxonomy is the large number of dyads. To pare down the 275 dyads to a manageable number for the capacity of our computer programs, and recognizing that dyads with little conflict behavior on any dimension would group together, we eliminated from our factor score matrix all dyads with standardized factor scores less than an absolute value of 1.5 standard deviations on any conflict dimension. This left 61 dyads on which to build a taxonomy.

The five patterns of foreign conflict behavior in 1963 are orthogonal and can be assumed to form a Cartesian coordinate system within which the dyadic factor pattern scores can be plotted. Each of the 61 dyads has a unique place in the space of the five patterns and each point is a unique Euclidean distance from all other points in the space. Dyads which are near one another in this space have similar profiles of behavior. Thus, the Euclidean distance can be employed as our measure of profile similarity - of conflict behavior similarity - for grouping dyads.

Two methods were employed to group the 61 dyads on their profile similarity -- the hierarchical clustering scheme (Johnson, 1967), and factoring distances (Rummel, 1968, Chapter 22). The method of factoring distances gave us six factor groups, for which we calculated and plotted group profiles to find the distinguishing similarities of the different groups (Hall, 1968).

Figure 4.1 lists the group members along with their factor loadings to indicate the degree to which each member approximates the group's center. The dyads are listed in order of descending centrality for each of the groups. Figure 4.2 presents a tabulation of the similarity characteristics for each group.

The group mean plots, with one standard deviation confidence intervals, are shown in Figure 4.3. The plots show the group profiles across the means of the population of foreign conflict study dyads on the five conflict patterns for 1963. The confidence interval for a group which is entirely above or below the population mean on a pattern is taken as a characteristic of the group. Thus, group III in Figure 4.3 is characterized by extensive negative communication, low incidence of violence and moderately low violence intensity.

Appendix III presents a display showing the correspondence between factor groups (Figures 4.1-4.3) and connectedness method groups from the hierarchical clustering scheme.

Figure 4.1
DYADIC MEMBERS OF 1963 FOREIGN CONFLICT BEHAVIOR GROUPS*

GROUP I (20 members)

.85 Senegal - Portugal
.84 USA - Dominican Republic
.82 Pakistan - India
.82 Cambodia - USA
.80 Netherlands - France
.78 Belgium - France
.77 Morocco - Egypt
.76 India - Union of South Africa
.76 USA - Cuba
.75 Congo (Leopoldville) - Russia
.75 United Kingdom - Indonesia
.74 Guatemala - United Kingdom
.71 USA - Haiti
.71 USA - Russia
.71 Venezuela - Haiti
.70 Haiti - USA
.69 USA - South Vietnam
.65 United Kingdom - Somalia
.64 India - Pakistan
.60 France - Russia

GROUP II (4 members)

.89 Yugoslavia - Albania
.88 Albania - Yugoslavia
.77 China - Taiwan
.74 Taiwan - China

GROUP III (6 members)

.87 Russia - USA
.84 China - USA
.79 China - Russia
.76 India - China
.76 Cuba - USA
.61 Russia - China

GROUP IV (4 members)

.84 Malaysia - Indonesia
.83 Dominican Republic - Haiti
.66 Indonesia - Malaysia
.60 France - Brazil

GROUP V (7 members)

.79 Venezuela - USA
.76 Indonesia - United Kingdom
.75 Columbia - USA
.68 Venezuela - United Kingdom
.63 Iran - USA
.63 Ecuador - USA
.56 Taiwan - Japan

GROUP VI (20 members)

.75 United Kingdom - Yemen
.75 South Vietnam - Cambodia
.73 Israel - Jordan
.72 Egypt - Saudi Arabia
.72 Syria - Israel
.70 Japan - USA
.69 North Korea - USA
.69 Israel - Syria
.68 Brazil - France
.66 Egypt - Israel
.64 Jordan - Israel
.62 Iraq - Israel
.60 South Vietnam - USA
.60 Bulgaria - USA
.59 Ethiopia - Somalia
.59 Somalia - United Kingdom
.58 Malaysia - Philippines
.57 United Kingdom - Russia
.55 Yemen - United Kingdom
.50 Lebanon - Syria

*Behavior for grouping is from the first nation toward the second. Factor analysis (principle axis, varimax rotation) of similarities matrix for 61 dyads. Group members have loadings greater than or equal to .5 on the factor, or highest loading on a single factor. Member loading indicates degree to which member approximates group modal behavior.

Figure 4.2

GROUPING CHARACTERISTICS FOR FOREIGN CONFLICT BEHAVIOR IN 1963

Patterns	GROUPS I	II	III	IV	V	VI
1 NEGCOM	..	low	very high	..	low	..
2 INCVIO	low	low	low	..	quite high	..
3 VIOINT	low	very high	low	..	moderately low	..
4 NBIOLB	..	low	..	very high	moderately low	..
5 NEGSAN	high	low	..	..	moderately low	low

Patterns are

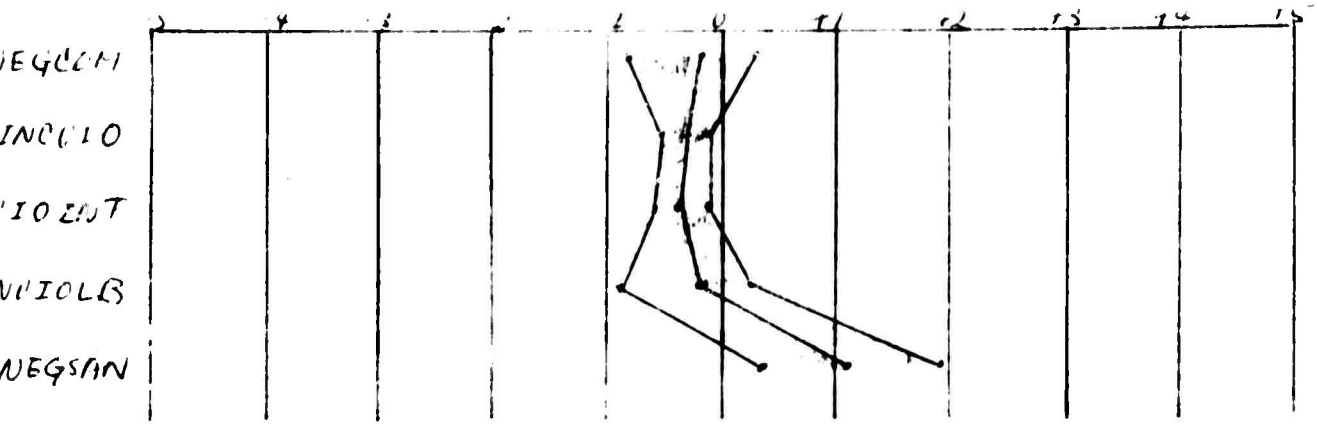
NEGCOM - negative communication
INCVIO - incidence of violence
VIOINT - violence intensity
NVIOLB - non-violent behavior
NEGSAN - negative sanctions

PERCENT OF PROFILE VARIANCE ACCOUNTED FOR BY THE SIX BEHAVIOR GROUPS*

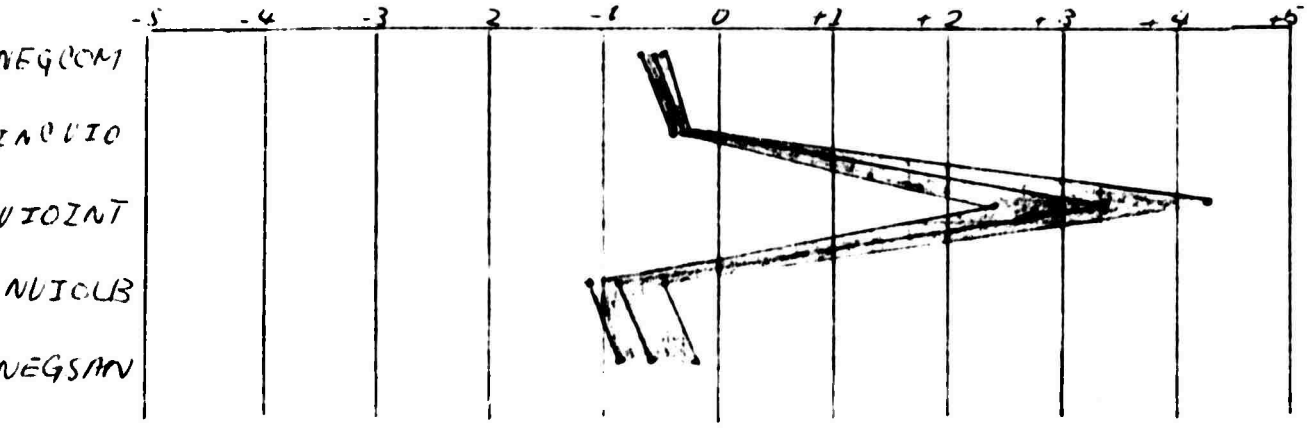
GROUP I	27.67 percent
GROUP II	8.02 percent
GROUP III	11.07 percent
GROUP IV	8.56 percent
GROUP V	9.41 percent
GROUP VI	23.18 percent

*The percent of profile variance figures measure that amount of total variation among all dyads on their conflict profiles accounted for by the group. The percentages are derived by summing the factor loadings for a group and dividing by 61 the number of dyads in the study.

Figure 4.3
Mean Profiles for Conflict Groups



GROUP II



GROUP III

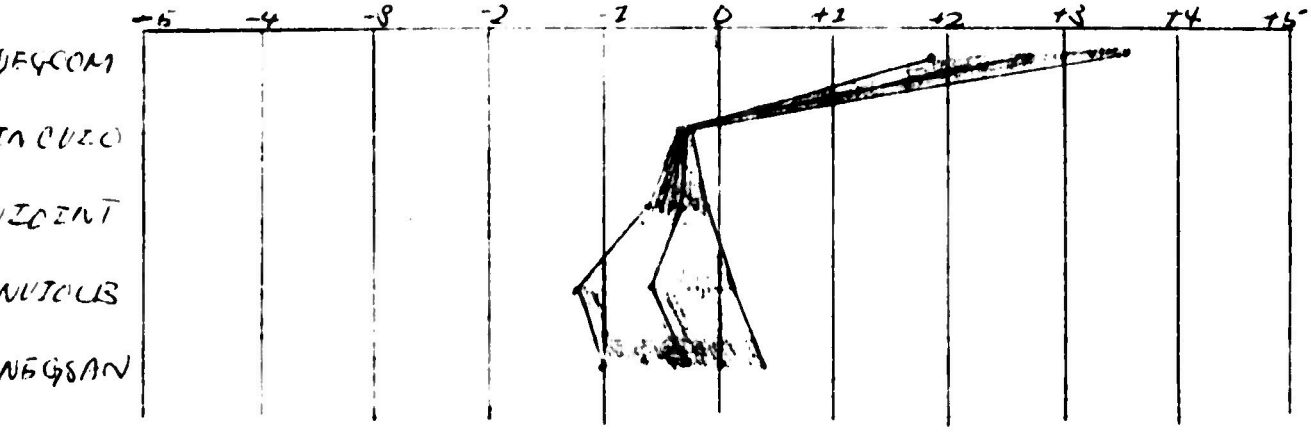
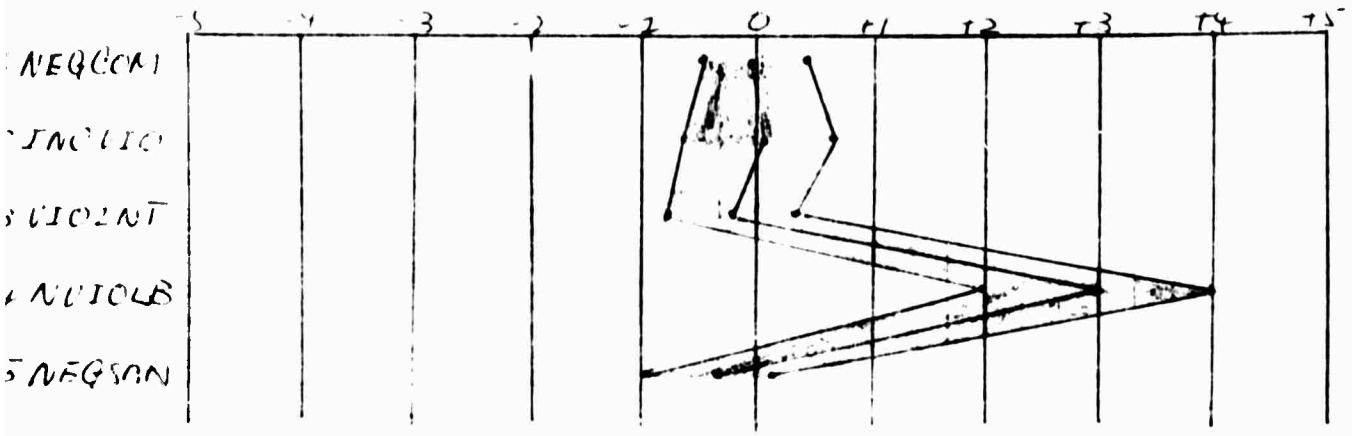
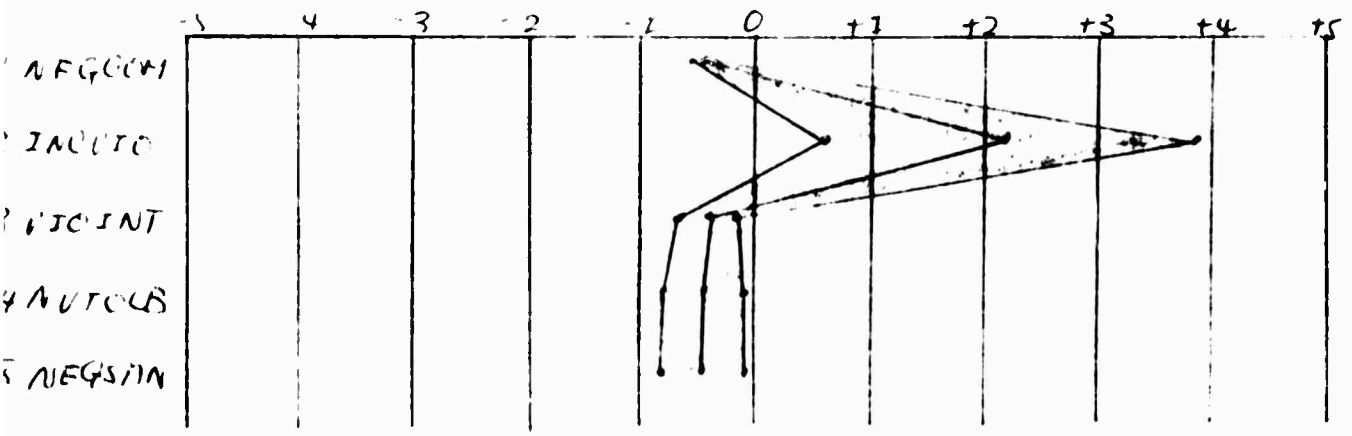


Figure 4.3 (cont.)

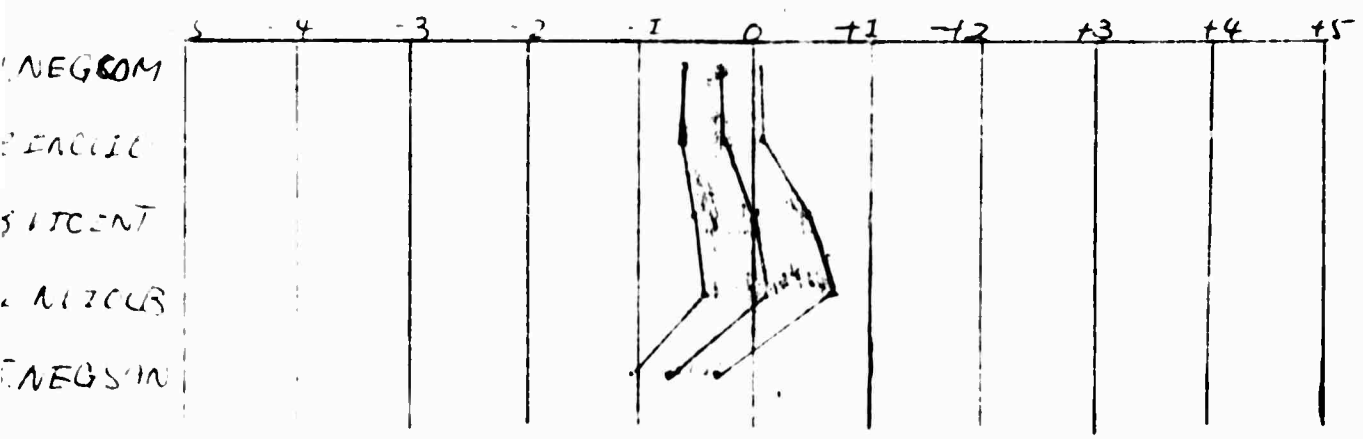
GROUP IV



GROUP V



GROUP VI



DATA LISTING AND STATISTICS - 1963 DYADIC FOREIGN CONFLICT

Variable Format Code for Data Listing 1963 Dyadic Foreign Conflict

col. 1-6	nation code numbers to specify dyad*
col. 7	warning and defensive acts
col. 8	alerts and mobilizations
col. 9-10	planned violent acts
col. 11	overt violence
col. 12-13	discrete military actions
col. 14-16	days of violence
col. 17-18	negative behavior acts
col. 19-20	unclassified negative acts
col. 21	severence of diplomatic relations
col. 22	expulsion or recall
col. 23	boycott or embargo
col. 24	aid to rebels
col. 25-27	negative communications
col. 28-29	written negative communication
col. 30-31	oral negative communication
col. 32-33	written or oral negative communication
col. 34-35	accusations
col. 36-37	protests
col. 38-39	minor themes
col. 40-41	unofficial violence
col. 42	attacks on embassy
col. 43	attacks on person
col. 44	attacks on flag
col. 45	non-violent behavior

*First three columns specify the I.D. number of the actor nation; col. 4-6 specify the I.D. number of the object nation.

PROBLEM 124 RUN 4 CORRECTED DYADIC FOREIGN CONFLICT DATA IMAGE

VARIABLE NO.	NAME	MEAN	SE	ST DEV	SE	SKEW	KURTOSIS
1	WARNDF	0.076	0.023	0.388	0.087	6.736**	53.513**
2	ALRTMM	0.069	0.022	0.370	0.090	7.300**	63.060**
3	PLNDYL	0.127	0.034	0.561	0.095	5.258**	29.451
4	WARACT	0.101	0.018	0.302	0.024	2.655**	5.083**
5	DISCMA	1.210	0.528	8.770	2.430	8.942**	82.796**
6	VIOLAC	10.409	5.251	87.234	24.459	9.071**	84.791**
7	NEGBEH	0.547	0.047	0.787	0.068	2.074**	6.280**
8	UNCNEG	0.174	0.029	0.481	0.057	3.399**	13.638**
9	SEVDPR	0.127	0.020	0.333	0.023	2.255**	3.109**
10	EXPREC	0.116	0.022	0.363	0.049	3.740**	17.951**
11	BCTEMB	0.058	0.016	0.263	0.042	4.939**	26.252**
12	AIDREB	0.033	0.011	0.178	0.028	5.292**	26.194**
13	NEGCOM	1.489	0.200	3.324	0.554	4.971**	28.682**
14	WRTCOM	0.504	0.106	1.757	0.320	5.561**	34.551**
15	ORLCOM	0.362	0.055	0.922	0.204	5.976**	52.225**
16	WRTORL	0.591	0.083	1.381	0.243	4.867**	32.109**
17	ACCUSN	0.757	0.141	2.338	0.480	6.286**	44.579**
18	PROTST	0.337	0.064	1.058	0.198	5.421**	36.795**
19	MINTHM	0.207	0.042	0.701	0.117	4.852**	28.853**
20	UNOFPV	0.214	0.058	0.958	0.364	11.333**	157.582**
21	ATKEMB	0.058	0.015	0.249	0.036	4.494**	21.318**
22	ATKOFP	0.062	0.019	0.319	0.063	6.078**	41.252**
23	ATKFLB	0.072	0.019	0.311	0.058	5.387**	36.187**
24	NVIOLB	0.116	0.031	0.520	0.134	7.506**	71.449**

SE - SKEW = 0.147
SE - KURTOSIS = 0.292

* Significant at .05 level
** Significant at .01 level

Alphabetical Listing of Nations

I.D.	Political Unit	Code Abbreviation	I.D.	Political Unit	Code Abbreviation
1.	Afghanistan	AFG	45.	Korea (Dem. Rep.)	KON
2.	Albania	ALB	46.	Korea (Rep. of)	KOS
3.	Argentina	ARG	80.	Laos	LAO
4.	Australia	AUL	47.	Lebanon	LEB
5.	Austria	AUS	48.	Liberia	LBR
6.	Belgium	BEL	49.	Libya	LBY
7.	Bolivia	BOL	93.	Madagascar	MAD
8.	Brazil	BRA	94.	Malaysia	MAL
9.	Bulgaria	BUL	95.	Mali	MLI
10.	Burma	BUR	96.	Mauritania	MAT
11.	Cambodia	CAM	50.	Mexico	MEX
83.	Cameroon	CAO	97.	Morocco	MOR
12.	Canada	CAN	51.	Nepal	NEP
84.	Central African Rep.	CEN	52.	Netherlands	NTH
13.	Ceylon	CEY	53.	New Zealand	NEW
85.	Chad	CHA	54.	Nicaragua	NIC
14.	Chile	CHL	98.	Niger	NIR
15.	China	CHN	99.	Nigeria	NIG
16.	China (Rep. of)	CHT	55.	Norway	NOR
17.	Colombia	COL	56.	Outer Mongolia	OUT
87.	Congo (Brazzaville)	CON	57.	Pakistan	PAK
86.	Congo (Leopoldville)	COP	58.	Panama	PAN
18.	Costa Rica	COS	59.	Paraguay	PAR
19.	Cuba	CUB	60.	Peru	PER
20.	Czechoslovakia	CZE	61.	Philippines	PHI
88.	Dahomey	DAH	62.	Poland	POL
21.	Denmark	DEN	63.	Portugal	POR
22.	Dominican Republic	DOM	64.	Rumania	RUM
23.	Ecuador	ECU	65.	Saudi Arabia	SAU
24.	Egypt (UAR)	EGP	100.	Senegal	SEN
25.	El Salvador	ELS	204.	Sierra Leone	SIE
26.	Ethiopia	ETH	101.	Somalia	SOM
27.	Finland	FIN	66.	Spain	SPN
28.	France	FRN	102.	Sudan	SUD
89.	Gabon	GAB	67.	Sweden	SED
29.	Germany (D.D.R.)	GME	68.	Switzerland	SWZ
30.	Germany (Fed. Rep.)	GMW	69.	Syria	SYR
90.	Ghana	GHA	213.	Tanganyika	TAN
31.	Greece	GRC	70.	Thailand	TAI
32.	Guatamala	GUA	103.	Togo	TOG
91.	Guinea	GUN	104.	Tunisia	TUN
33.	Haiti	HAI	71.	Turkey	TUR
34.	Honduras	HON	72.	Union of S.Africa	UNS
35.	Hungary	HUN	73.	USSR	USR
36.	India	IND	74.	United Kingdom	UNK
37.	Indonesia	INS	75.	USA	USA
38.	Iran	IRN	105.	Upper Volta	UPP
39.	Iraq	IRQ	76.	Uruguay	URA
40.	Ireland	IRE	77.	Venezuela	VEN
41.	Israel	ISR	81.	Vietnam (N)	VTN
42.	Italy	ITA	82.	Vietnam (S)	VTS
92.	Ivory Coast	IVO	78.	Yemen	YEM
43.	Japan	JAP	79.	Yugoslavia	YUG
44.	Jordan	JOR			

IMAGE ANALYSIS TABLE OF FACTOR LOADINGS AND COVARIANCE MATRIX

Image Orthogonally Rotated Factor Matrix*

Factor Number			1	2	3	4	5
Sum Squares Over Variables			4.700	2.396	2.048	2.177	1.925
Variable No.	Name	Communality 5 Factors					
1	WARNDF	0.899	.0.157	0.075	0.092	-0.927	0.033
2	ALRTMM	0.875	0.161	0.051	0.065	-0.918	0.017
3	PLNDYL	0.220	0.079	0.403	-0.093	-0.202	0.048
4	WARACT	0.447	0.075	0.603		-0.262	0.038
5	DISCMA	0.924	-0.049	(0.952)	0.017	0.118	-0.040
6	VIOLAC	0.904	-0.058	0.938	0.023	0.140	-0.043
7	NEGBEH	0.687	0.092	-0.038	(0.818)	-0.083	-0.038
8	UNCNEG	0.476	0.107	-0.029	(0.674)	-0.068	0.071
9	SEVDPR	0.270	-0.156	-0.020	0.431	-0.221	-0.102
10	EXPREC	0.311	-0.005	-0.060	(0.535)	0.143	-0.032
11	BCTEMB	0.255	-0.003	-0.037	0.493	0.090	-0.050
12	AIDREB	0.142	-0.010	0.236	0.288	0.035	-0.045
13	NEGCOM	0.956	(0.976)	0.005	0.022	-0.011	-0.041
14	WRTCOM	(0.772)	(0.858)	-0.021	0.059	0.179	-0.025
15	ORLCOM	0.491	(0.687)	0.030	-0.102	-0.079	-0.038
16	WRTORL	0.687	(0.793)	0.028	0.071	-0.224	-0.037
17	ORLCOM	0.833	(0.908)	0.036	-0.068	-0.020	-0.035
18	PROTST	0.424	(0.571)	-0.073	0.245	0.181	0.017
19	MINTHM	0.679	(0.799)	0.070	-0.062	-0.177	-0.033
20	UNOFPV	0.664	-0.035	-0.003	-0.056	-0.012	(0.812)
21	ATKEMB	0.105	-0.028	-0.000	-0.046	-0.165	0.274
22	ATKOFP	0.599	-0.036	0.012	0.006	0.001	(0.773)
23	ATKFLG	0.562	-0.044	-0.014	-0.050	0.059	(0.744)
24	NVIOLB	0.063	-0.043	0.010	-0.045	-0.241	0.025

*Varimax Technique. Loadings greater or equal to an absolute value of .50 shown in parantheses.

Table 4.1

IMAGE COVARIANCE MATRIX*

Variable No.	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	VARNDF	.96																							
2	ALRTMB	.94	.96																						
3	PLNTIL	.12	.09	.59																					
4	MARACT	.22	.16	.60	.72																				
5	DISCMA	-.00	-.01	.20	.40	1.00																			
6	DAYVIL	-.02	-.02	.17	.37	1.00	1.00																		
7	NEGACT	.12	.11	-.03	-.03	-.04	-.03	.94																	
8	UNCNFG	.11	.09	-.01	-.03	-.04	-.04	.56	.87																
9	SEVDPR	.16	.13	-.01	.01	-.04	-.05	.32	.13	.78															
10	EXPREC	-.05	-.07	-.08	-.11	-.04	-.04	.34	.15	.11	.77														
11	BCGTEM	-.03	-.05	-.05	-.08	-.03	-.03	.26	.19	.19	.31	.65													
12	AIDREB	.03	.01	.03	.12	.19	.19	.07	.13	.18	.19	.18	.48												
13	NEGCOM	.17	.18	.06	.06	-.03	-.04	.09	.11	-.11	-.00	-.00	.01	.97											
14	WRTCOM	.01	.01	-.02	-.02	-.03	-.03	.10	.06	-.09	.03	.01	.08	.84	.96										
15	ORLCOM	.16	.15	.05	.05	.00	-.01	-.02	.07	-.06	-.08	-.03	-.03	.64	.51	.83									
16	WRTORL	.31	.31	.13	.13	-.03	-.05	.12	.16	-.08	.04	.05	-.04	.76	.55	.51	.92								
17	ACCUSN	.14	.14	.10	.10	-.02	-.04	.02	.01	-.07	-.01	-.03	.04	.90	.77	.62	.68	.95							
18	PROTST	-.00	.01	-.06	-.08	-.04	-.04	.20	.22	-.10	.08	.11	-.00	.59	.57	.19	.40	.36	.83						
19	MINTHS	.26	.26	.18	.20	-.02	-.03	.10	.01	-.12	-.03	-.03	-.05	.78	.59	.60	.68	.76	.33	.75					
20	UNOFVL	.03	.02	.00	.02	-.03	-.02	-.09	-.03	-.06	-.04	-.05	-.04	-.06	-.05	-.05	-.06	-.04	-.04	-.05	.74				
21	ATKEMB	.16	.17	.05	.04	-.02	-.03	-.05	.00	-.04	-.04	-.05	-.03	-.03	-.05	-.04	-.02	-.02	-.04	-.01	.23	.14			
22	ATKPER	.02	.00	.04	.03	-.02	-.02	-.05	.04	-.02	-.03	-.01	-.01	-.07	-.04	-.03	-.06	-.06	-.06	-.05	.60	.20	.63		
23	ATKFLG	-.03	-.05	.01	-.01	-.03	-.03	-.06	-.01	-.10	-.03	-.06	-.05	-.08	-.05	-.05	-.07	-.06	-.06	-.06	.57	.19	.62	.60	
24	NVTCLB	.22	.22	.06	.07	-.02	-.02	-.05	-.05	.06	-.06	-.00	-.00	-.04	-.04	-.03	-.01	-.03	-.05	.00	.04	.05	.11	.00	.11

*N = 275 Dyads, Diagonal Elements are MSC.

CORRECTED DYADIC FOREIGN CONFLICT DATA: RAW DATA LISTING

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022033440000000000000000008000206040002011000
022034000000000000000000000000000000000010010
022075000000000000000000010000010100001001C
022077000000000000000000000000000000000010010
023019000000000001001000000000000000000000000
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023075000000000000000000000000000000000020110
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024072000000000010000100000000000000000000000
024097000000000000000000010100000001000000000
025019000000000010010000000000000000000000000
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029015000000000000000000002000200020000000000
029028000000000000000000010100000001000000000
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029075000000000000000000030200010002010000000
029086000000000000000000001000001000100000000
030190000000000001001000000000000000000000000
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030740000000000000000000000000000000000011000
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033022000000000000100100000400000404000100000
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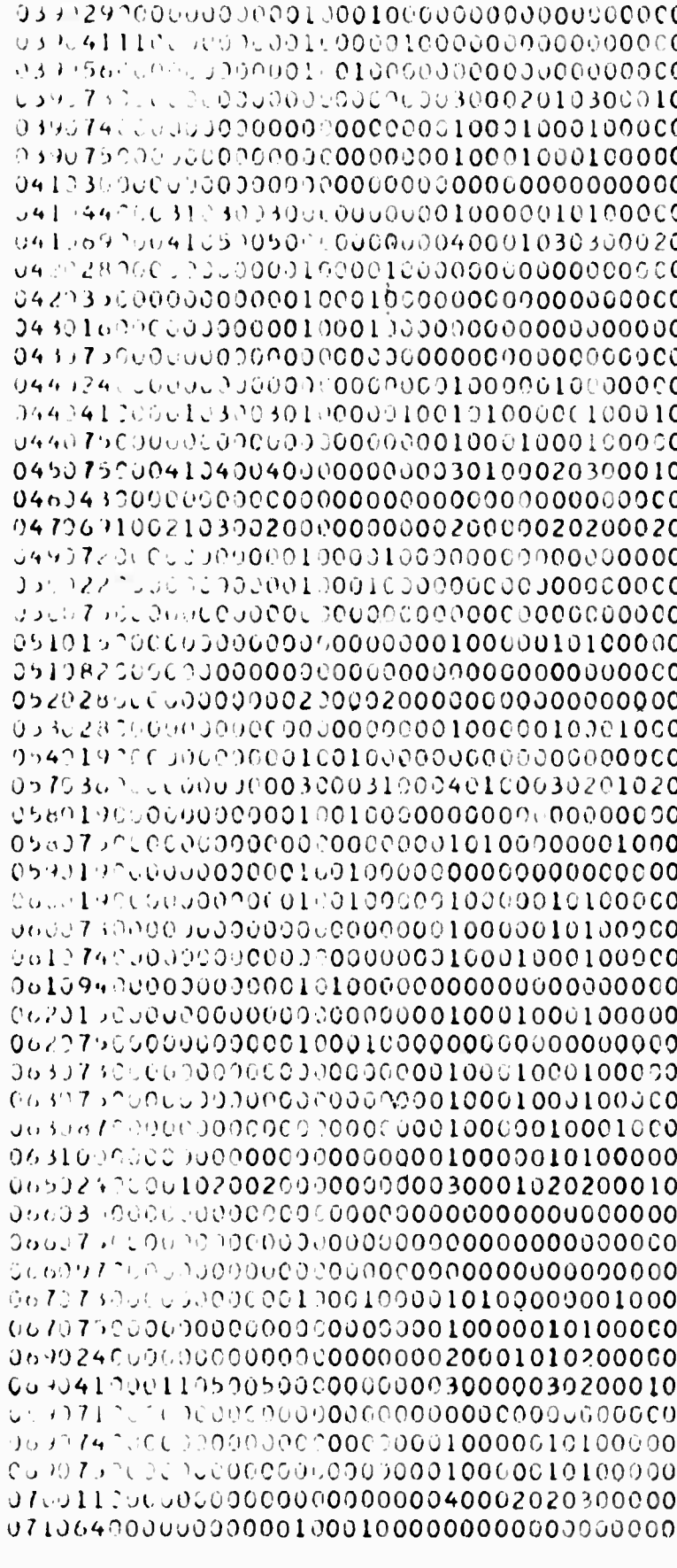
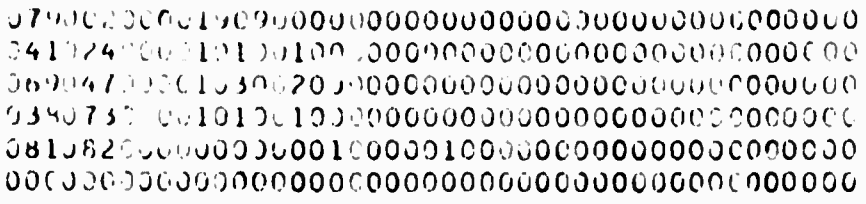


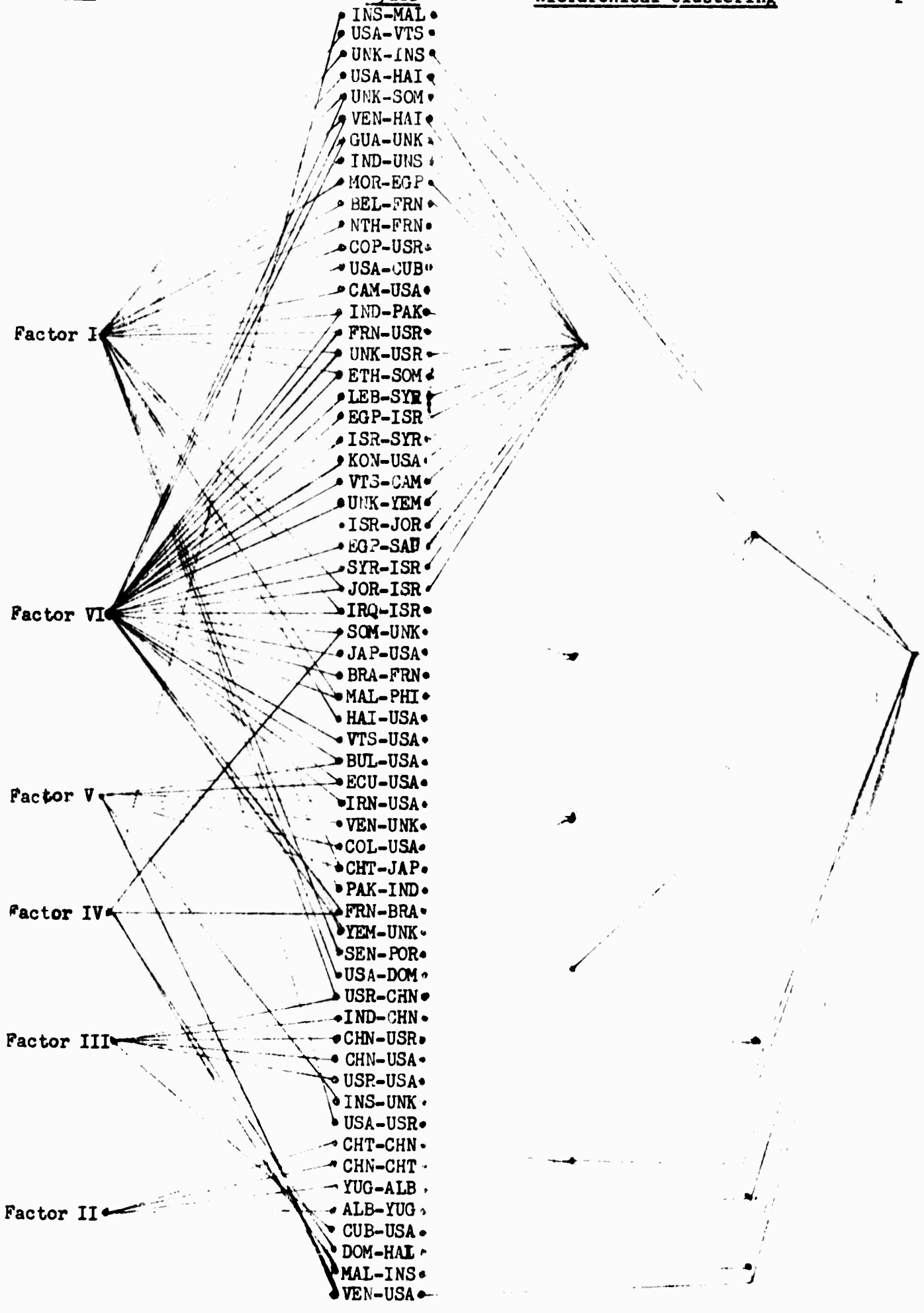


Part 4 of the report presented six groups of dyadic conflict behavior for 1963 and indicated that we had used several techniques for grouping the 61 dyads on their Euclidean distances. The factor groups were selected for presentation and discussion in the body of the report because they seemed most reasonable and straightforward. We are not completely satisfied with any of our techniques for grouping and are at present working on a research report to explicate some of the difficulties encountered (Phillips, not in references, forthcoming). We had thought that hierarchical clustering scheme connectedness method groups would be relatively easy to interpret, but find that it is not easy to choose groups from among the seventy or so given us by the method. The hierarchical method builds groups by relaxing the requirements for grouping similarity as the technique works from the individual dyad to a grouping of all dyads. Three levels of similarity were selected and plotted to give a visual comparison between the factor groups and the hierarchical connectedness groups.

Factor Group

Dyads

Hierarchical Clustering



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